

What Is Claims Is:

1. An optionally functioning device employing a quantum dot functional structure as active layer, said quantum dot functional structure being fabricated by an apparatus for fabricating a quantum dot functional structure comprising:

a fine particle generating chamber for generating fine particles,

a fine particle classifying chamber for classifying the fine particles generated in said fine particle generating chamber according to a desired particle diameter in a gas,

gas exhaust means for exhausting a gas for transporting said fine particles,

transparent medium generating means for generating a transparent medium, and

a depositing chamber for collecting the fine particles classified in said fine particle classifying chamber onto a substrate as well as for collecting the transparent medium generated by said transparent medium generating means onto said substrate and for depositing said classified fine particles and said transparent medium onto said substrate.

2. A method for fabricating a quantum dot functional structure comprising:

generating fine particles,

classifying said fine particles generated according to a desired particle diameter in a gas,

exhausting the gas for transporting said fine particles after said classifying,

5 collecting said classified fine particles onto a substrate and generating a transparent medium at the same time, and

depositing said classified fine particles and said transparent medium onto said substrate at the same time.

10 3. The method for fabricating a quantum dot functional structure according to claim 2, wherein the transparent medium is generated using, at the same time or alternately, any one of or both first transparent medium generating means, disposed in a depositing chamber for
15 depositing the fine particles and the transparent medium, and second transparent medium generating means arranged independently.

 4. The method for fabricating a quantum dot functional structure according to claim 2, wherein the fine
20 particles and the transparent medium are controlled independently of each other so that each pressure upon generation thereof becomes optimum at the same time, and thereby generated.

5. The method for fabricating a quantum dot functional structure according to claim 2, wherein the gas for transporting fine particles is exhausted, after said classifying the fine particles, in accordance with a pressure of the depositing chamber for depositing the fine particles and the transparent medium into the substrate.

6. The method for fabricating a quantum dot functional structure according to claim 2, further comprising maintaining a path of the fine particles at a constant temperature after said classifying the fine particles.

7. The method for fabricating a quantum dot functional structure according to claim 2, further comprising observing, using a charge coupled device, a plasma plume produced when at least one of the fine particles and the transparent medium is generated using laser ablation.

8. The method for fabricating a quantum dot functional structure according to claim 2, further comprising observing fluorescent light from said fine particles and said transparent medium, emitted when at least one of said fine particles and said transparent medium is radiated with ultraviolet light upon generation thereof.

9. A quantum dot functional structure fabricated by the method of claim 2.

10. An optically functioning device employing the quantum dot functional structure according to claim 9 as an
5 active layer.